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Bob Taft, Governor
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June 26, 2006

RE: NEASE CHEMICAL SUPERFUND SITE
COLUMBIANA COUNTY
FEASIBILITY STUDY
OHIO EPA COMMENTS

Ms. Mary Logan
Remedial Project Manager
U.S. EPA Region V
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Dear Ms. Logan:

Enclosed are Ohio EPA's comments on the May 2006 Pre-Design Investigation (PDI) Work Plan for Operable Unit 2 of the Nease Chemical Superfund Site, located in Salem, Ohio. The report was submitted by Golder Associates, Inc., on behalf of Rutgers Organics Corporation (ROC). The comments include those provided by the Division of Drinking and Ground Waters' (DDAGW) reviewer, Kevin Palombo, and our Central Office remediation specialist, Dr. Timothy Christman. As requested, the comments have been categorized into (A) major comments, impacting the ability to achieve the Record of Decision (ROD) and Statement of Work (SOW) goals; (B) recommendations, or ideas to optimize the PDI; and (C) minor comments that should not fundamentally alter the work or results.

Please let me know if I can clarify any of the comments. I will be happy to work with you on any questions that you may have when you consolidate the Agencies' comments prior to transmitting them to Rutgers Organics Corporation. I also look forward to discussing these comments with the Site technical team, as necessary.

Sincerely,

Sheila Abraham, Ph.D.
Site Coordinator/Risk Management ES-III
Division of Emergency and Remedial Response

SA/kss

enclosure

ec: Timothy Christman, ES-3, Ohio EPA, DERR, CO
Steve Love, Supervisor, Ohio EPA, DERR, NEDO
Kevin Palombo, Geologist 3, Ohio EPA, DDAGW, NEDO
Rod Beals, Manager, Ohio EPA, DERR, NEDO

OHIO EPA COMMENTS ON THE (MAY 2006) PRE-DESIGN INVESTIGATION WORKPLAN FOR OPERABLE UNIT 2 OF THE NEASE CHEMICAL SITE

Below are comments provided by Ohio EPA (comments from the remedial design reviewer in DERR-CO and the ground water reviewer in DDAGW-NEDO, as well as the DERR site coordinator) on the May 2006 Pre-Design Investigation (PDI) Workplan for Operable Unit (OU) 2 of the Nease Chemical Site. The comments are provided in three categories: A) Major, impacting the ability to achieve the Record of Decision (ROD) and Statement of Work (SOW) goals; B) Recommendations, or ideas to optimize the PDI; and C) Comments that should not fundamentally alter the work or the results.

A. MAJOR COMMENTS (impacting the ability to achieve ROD and SOW goals)

1. Thickness of the soil cover: Ohio EPA has significant reservations regarding the total thickness of the soil cover proposed (one foot of clean soil). The Agency has normally required at least two feet of clean soil to prevent direct-contact with underlying contaminated soil. Ohio EPA is concerned that one foot of cover might be penetrated by deep erosion rills that would lead to runoff of the underlying mirex contaminated soil; two feet of cover will act as an adequate buffer to protect against deep localized erosion, at least until it can be repaired. The Agency is willing to defer the issue of the thickness of the soil cover to the actual design document, as long as the information provided in the PDI on characterization is adequate (i.e., encompasses both the zero to one foot and the one to two feet zones), and the Agency is not obligated to commit to the one foot clean soil cover thickness, at this point.

2. Southeast plume considerations: Ohio EPA believes that the "step out" criteria to delineate the south eastern plume may not be sufficiently rigorous to achieve the risk goals for the Site in OU 2. Specifically, the report (Section 3.1.3.1, Page 26) calls for a second round of sampling at locations approximately 25 to 100 feet from the first round, if the total VOC concentration "on-Site" exceeds 10% of the total VOCs in PZ-7 and B-S. The total VOC concentrations in PZ-7 and B-S are ~36,000 µg/L. Therefore, "stepping out" the wells to 10% of these levels may not be sufficient to delineate the extent of contamination and support the design to achieve OU 2 risk goals. The Agency is also concerned that total VOC concentrations may not be the appropriate screening tool, since compounds with relatively lower concentrations, such as vinyl chloride, may be relatively more toxic. Please see technical comments on Section 3.1.3.1 below, and the enclosed spreadsheet. Ohio EPA is willing to work with U.S. EPA and the responsible party and evaluate the data provided during the proposed "step out" process to help achieve the remedial goals, and ensure that human health and the environment are protected.

3. Water source for NZVI slurry: Appendix E, Page E-2: paragraph 1 states that during the pilot test, nano-scale zero valent iron (NZVI) solution will be pumped from 55 gallon drums to a temporary holding tank, and ground water from NZVI-2 or from on-site potable water sources will be used to form the NZVI injection slurry. Is this the accepted protocol for NZVI pilot testing? If not, the Agency has concerns regarding the proposed

use of water extracted from well NZVI-2 to create the injection slurry for technical reasons, as well as programmatic reasons associated with injecting contaminated water. The potential volatile organic chemical (VOC) concentrations, as well as mineral content, could complicate the NZVI injection process pre-design. Accurate information on the materials injected necessary for the exemption from the administrative requirements of Ohio EPA's underground injection control (UIC) program may be difficult to obtain for the proposed process. Unless technical reasons exist to the contrary, the Agency recommends that uncontaminated water be used to create the injection slurry.

B. RECOMMENDATIONS (ideas to optimize PDI)

4. Section 2.1.1 New Well Installation, beginning on page 6 and Table 1: The proposed list of wells to be sampled (Table 1) is a comprehensive list that will be useful in establishing a baseline for the study. Monitoring wells S-9 and/or PZ-5M would allow a better characterization of ground water quality beneath background/upgradient areas near the Southern plume. Ohio EPA; therefore, recommends wells S-9 and/or PZ-5M be added to the list.

5. Section 2.1.1 New Well Installation, beginning on page 6 and Table 1: Several wells that are part of the baseline groundwater monitoring program need repair or upgrading.

   - Wells, S-17 and S-14 need to be brought up above grade and need new caps. They are currently below grade, without a protective cover.

   - Well D-14 needs a cap.

   - Wells D-7 and D-8 need to be brought up to grade. They are currently below grade.

   - Well S-19, though not part of proposed baseline study, needs to be replaced. This well appears to be in a location that is important for tracking the furthest extent of plume to the east. Please consider adding a well in this location to the baseline groundwater monitoring system.

6. Section 2.1.1 New Well Installation, Page 7, paragraph 2: This paragraph states that a focused DNAPL investigation will be performed during the baseline ground water monitoring. Monitoring well RW-1, a deep well (which Ohio EPA thought had been abandoned), still exists, according to recent monthly reports (May 2006). This is a deep well in a contaminated area that may be critical to identifying DNAPL. Please include this well in the DNAPL study.

7. Section 2.4.2, NZVI Treatability Studies, Page 14-16 and Section 3.4.2.1, Preliminary Bench Studies, Page 50: Mirex was detected during the July 2003 sampling event in several wells in the "source plume" (D-11, D-12, PZ6B-L, PZ6B-U and S-12), as well as in wells in the vicinity of Ponds 3, 4, and 7 (S-2 and S-11). Depending on the results of the baseline groundwater monitoring, please consider the potential for treatment of mirex by NZVI. This comment is also applicable to the field studies.

8. Section 3.1.3.1, Rationale and Locations, Page 26: As mentioned under "Major Comments," the Agency has concerns regarding whether the "step out" decision criteria (if total VOCs exceed 10% of the total VOCs in PZ-7 and B-S) will be sufficient to support a remedial design that will achieve the risk goals for the site; please see enclosed spreadsheet on chemicals of concern (COC) concentrations in the southeast area. Also, an across-the-board 10% total VOC based criterion does not take into account chemicals of concern (COCs) with relatively low concentrations that are however relatively much more toxic. Specifically, the ratios of the relatively more toxic COCs (such as TCE, PCE, and vinyl chloride) to their maximum contaminant level (MCLs) is extremely high; this contrasts with lower ratios for comparatively less toxic chemicals such as chlorobenzene and 1,2-dichlorobenzene. The Agency is willing to review data from the temporary wells in this area, to help make decisions to support the OU 2 remedial goals. Also, since around 36,000 µg/L of total VOCs were detected in the south eastern wells, 10% is 3,600 µg/L, not the 360 µg/L; please verify and revise the text as necessary.

9. Section 3.1.5.1, Page 30: Paragraph 2 states that the third piezometer would be located to the side of the trench as a control point unaffected by the trench, yet Figure 3 shows the third piezometer directly downgradient of the trench. Ohio EPA believes that a location downgradient of the trench would be more useful to identify any drops in water level or contaminant concentrations induced by the trench. Please make this change or clarify. Please also provide information on how the hydraulic tests conducted on trench during the PDI will consider rainfall events. Monitoring the water not being captured by the trench will help design a system that achieves the remedial goals.

10. Section 3.2.1, Rationale and Locations, Page 33 and Figure 6: The ditch sampling may need to be extended if mirex is detected at concentrations greater than site risk goal in sampling locations at the corners of the former Nease facility. Please add such a provision to the PDI.

11. Section 3.4.2.2 NZVI Field Study, Page 50: The Agency recommends that the screen for the NZVI-1 monitoring well should also be 15 feet long, the same as for the other two wells. In this manner, the screen for NZVI-1 would also meet the criterion of extending two feet above and eight feet below the screen of the injection well PZ-6B-U. The Agency is willing to evaluate the vertical distribution of the field parameters collected and provide feedback on where to sample, given the length of the screen.

12. Table 1, Page 2, Footnote (4): The footnote states that background samples collected for natural attenuation parameters will not be analyzed for methane, ethane, and ethane. Ohio EPA would recommend sampling for these constituents. Methane may be a naturally occurring product of the biodegradation process. Background data on ethene and ethane may be helpful to assess the rate of VOC degradation in contaminated areas.

13. Table 1: Is it possible to add the screen depths to Table 1, or provide a table with the screened depths to facilitate field work?

14. Table 4: The aqueous reporting limits (RL) for a few chemicals of concern (on spot checking, vinyl chloride, methylene chloride, benzo(a)pyrene, bis(2-ethylhexyl) phthalate, pentachlorophenol and hexachlorobenzene) are greater than their MCLs. Please request the laboratory to achieve lower detection limits for these chemicals—in particular, vinyl chloride, since it is a significant contributor to risk from ground water. The Agency acknowledges that the method detection limit (MDL) is lower than the MCL for most of these chemicals, so a "J" value would probably be reported if the chemical was detected above the MDL.

15. Figure 3: The interceptor trench may need to be extended further to the north and west to intercept contaminated ground water from the former Pond 2 area.

16. Appendix A, Groundwater Hydrographs (for site monitoring wells): The latest readings for wells S-18 and S-19 appear to be anomalous. Well S-18 is approximately 10 feet higher in elevation than the last recorded measurement and Well S-19 is approximately 12 feet lower than the last recorded measurement. Though there were no remarks in the notes, well S-19 is in very poor condition. Based on Ohio EPA's observations of August 22, 2005, the inner casing above grade is rusted and may have actually collapsed in the well. This well needs to be abandoned and replaced with a new well in the same location.

17. Appendix F, Health and Safety Contingency Plan: Although, in many cases, NZVI is listed and is included in the appendix with a material safety data sheet (MSDS), it would be appropriate that this document treat the NZVI as a significant potential hazard in dust form and include it in section 3.0 as a material to be monitored during mixing and injection processes.

18. Appendix F, Health and Safety/Contingency Plan: Are additional precautions (orange vests) needed during the hunting season? Also, are there special precautions necessary during wetlands delineation/categorization?

C. MINOR COMMENTS (that should not fundamentally alter work or results)

19. Section 1.2, Ground water conditions, Page 3, 3rd bullet: Please change "off-Site" in the last sentence to "off-property." The monitoring wells are off-property, but not necessarily off-Site (until it has been documented that the shallow ground water in the southern off-property area has not been impacted by the Site).

20. Section 1.2, Ground water conditions, Page 3, last bullet and Section 2.1, Ground water conditions, Page 5, 3rd bullet and Section 2.4.1.2, Design Objectives, 4th paragraph: Please clarify that monitored natural attenuation is only proposed for the far downgradient portion of the plume.

21. Section 1.2, Surface features, Page 4, 2nd bullet: Is it "potential impacts *from* the remedy," not "to the remedy?"

22. Section 2.1, Ground water conditions, Page 5, last bullet: Please clarify what is meant by "off-property" – Crane Deming? Or something else?

23. Section 2.1.1 New Well Installation, beginning on page 6 and Figure 2: Well S-14, a well proposed to be sampled, is missing from Figure 2. Please add it back to the figure.

24. Section 2.4.1.1 Page 12, paragraph 3, sentences 6 and 7: This section referring to Stripping, Stabilization and Solidification (S/S/S) Treatability Study, states, "Clay based stabilization and solidification (S/S) agents retain water in the interstices of the clay particles. Therefore, clay formulations **may** provide sufficient water for the dechlorination reaction to proceed during and after the clay S/S agent is mixed with the soi ..." Are bench scale studies proposed to evaluate this potential?

25. Section 2.4.2, Field Pilot Study, Page 16: Please clarify the criteria for extending the "limited monitoring" proposed for longer term? Also, what does "longer term" mean – over different seasons? Or longer? Or until specified levels or percentages are achieved?

26. Section 3.1.1.2: Procedures for the installation and development of new wells, Page 19: Please assure the new wells include a weep hole drilled through the protective casing near ground level.

27. Section 3.1.3.1, Rationale and Locations, Page 26: While the Agency will make every effort to achieve the 48-hour turnaround review time, this may not be possible, if data are provided on a Friday, unless prior notice is provided. Will changing the turnaround time to one "business day" achieve the intended purpose?

28. Section 3.2.3.2 Sampling Procedures, Page 39: This section provides the mechanical properties tests for soil samples (consolidation and triaxial shear). Do the numbers following each test refer to the total number of samples to be analyzed or to the number from each of the individual ponds and the sludge pile area?

29. Section 3.4.1.2, Page 41, Phase I Field Sampling and Baseline Characterization, 1st paragraph, last sentence: This section states that if a sample is not considered chemically representative of the impacted material in the former pond area, the task will be repeated. This needs clarification. What criteria would be used to determine if a specimen is not representative? Is ROC concerned with unusually clean or unusually contaminated samples? The Agency's specific concern is that a highly contaminated sample should not be rejected as an outlier without a very good reason.

30. Section 3.4.1.2, Page 43, Phase II Formulation screening tests: What procedure will be used to test the stabilized specimens for penetrometer strength?

31. Section 3.4.1.2, Page 44, Air Stripping Evaluation: Will the volumes or flow rates of air used in the laboratory tests result in ratios of air volume to soil volume similar to those that will be used in actual field practice? The Agency's concern is that the laboratory tests not use air/soil ratios higher than those to be used in the field, resulting in an overestimate of the performance of the air stripping process.

32. Section 3.4.1.2, Page 44, Air Stripping Evaluation: The benefits of air stripping prior to solidification and stabilization will be evaluated from a field sample. This test will be a bench scale test conducted within a sealed "glove box." Please describe the size of this "glove box" and size and collection method of soil sample used in this evaluation.

33. Section 3.4.1.2, Page 45, Stabilization/ ZVI Evaluation: Regarding the evaluation of the additions of ZVI to soil solidification and stabilization bench scale tests, please clarify the form of the ZVI used in this test. Are they "filings?" Please give a description of this proposed material.

34. Phase IV Verification Tests, Page 46: Mirex analytical methodology is not provided in table. Please add as appropriate.

35. Section 3.4.2.1 Preliminary Bench Studies, Page 47: This section mentions that soil and rock specimens will be tested. Will they be saturated with contaminated ground water from the site? Will the rock be crushed first or used in the condition that is was removed from the ground?

36. Section 3.4.2.2, Page 49: Paragraph 4 states that "a slurry will be injected over a period of several days." However, Appendix E, Page E-3, states that during the last step of the NZVI injection test, the system will be operated for "one additional hour" to allow clearing of the NZVI from the well bore. Please explain this discrepancy in the time period of NZVI injection.

37. Figure 3: Two of the three proposed NZVI wells in the figure are labeled NZVI -1. NZVI-2 is not labeled; please correct this on the figure.

38. Figure 3: Please use a better contrasting color (than gray) to show the trench location in the main figure; also a blow-up of the final trench design would be valuable on this figure.

39. Figure 8: Please copy Ohio EPA's project coordinator on the 5x26 aquifer remediation project exemption submittal, to facilitate the review process.

40. Appendix E: Please consider adding a table similar to Table 1 in the main text for the NZVI wells proposed.

41. Appendix E, Page E-3, Paragraph 1: (See comments on Section 3.4.2.2, Page 49.) Page E-3 states that during the last step of the NZVI injection test, the system will be operated for "one additional hour" to allow clearing of the NZVI from the well bore. Whereas, page 49 of the main text, paragraph 4, states that "a slurry will be injected over a period of several days." Please explain this discrepancy in the time period of NZVI injection.

42. Appendix F Section 5.4, Page F-31and Table 2: Is it necessary to add the combustibility of dry NZVI to these sections?

43. Appendix F, Section 5.6.1, Page F-32: How will the information on elevated VOC levels be communicated to down-wind non-Site work related receptors as necessary?

44. Appendix F (Health and Safety/ Contingency Plan) Table 3: If available, please add regulatory levels for all COCs detected on-site. For example, carbon tetrachloride (detected in the southeast area ground water) and ethylbenzene are missing from the table.

End of Ohio EPA comments on the May 2006 Nease Chemical Site PDI

NEASE CHEMICAL SITE: SOUTHEAST AREA GROUNDWATER

	GW Screen Levels		GW to Indoor Air Screening Levels			MW ID															
	MCL	Region 9	10^{-4}	10^{-5}	10^{-6}	A-S	A-UBA	B-S	Qual	PZ-3S	Qual	FPZ-3S (Dup)	Qual	PZ-3M	PZ-3B	PZ-4S	PZ-4M	Qual	PZ-4B	PZ-7	Qual
	ppb	*ppb (ug/L)*	*ppb (ug/L)*	*ppb (ug/L)*	*ppb (ug/L)*																
Screened Interval *feet bgs (formation)*						7 to 21	44 to 58.5 (MKS)	8.5 to 20.5		10 to 20				27 to 37	58 to 63 (MKS)	7.4 to 12.4	22.6 to 27.6		55 to 60 (WS)	10 to 15	
COCs Detected																					
ppb																			NS		
Acetone	N/A	5,500	220,000	220,000	220,000	10		65		460		490		21	<19	<19	<10			<10	
Benzene	5	0.35	140	14	5*			4100		1400		1400		<5	<5	<5	<5			22	
Carbon tetrachloride	5	0.17	13	5*	5*	<5		<5		<5		<5		<5	<5	<5	<5			13	
Chlorobenzene	100	110	390	390	390			640		120		120		<5	<5	<5	<5			1000	
Chloroform		0.17	80*	80*	80*	<5		41		44		44		<5	<5	<5	<5			73	
1,2-Dichlorobenzene	600	370	2,600	2,600	2600	10		7530		6700		7200		<5	<5	<5	<5			3100	
1,3-Dichlorobenzene	N/A	180	830	830	830	<5		6		3	J	3	J	<5	<5	<5	<5			<5	
1,4-Dichlorobenzene	75	0.5	8,200	8,200	8,200	<5		70		54		55		<5	<5	<5	<5			17	
1,1-Dichloroethene (1,1-DCE)	7	340	190	190	190	<5		80		3	J	3	J	<5	<5	<5	<5			12	
1,2-Dichloroethane		0.12	230	23	5*	98		3800		460	J	790	J	<5	<5	<5	<5			410	
1,3-Dichloropropene (trans)	N/A	0.4	28	8.4	0.84	<5		420		22		22		<5	<5	<5	<5			18	
1,3-Dichloropropene (cis)	N/A	0.4	28	8.4	0.84	18		14000		1300		1300		<5	<5	<5	<5			2700	
Ethylbenzene	700	1,300	700*	700*	700*	<5		3	J					<5	<5	<5	<5			<5	
Phenol	N/A					<10		<10		7	J	<10		<10	<10	<10	<10			<10	
Tricloroethene (TCE)	5		5.3	5*	5*	8		2900		2800		3000		<5	<5	<5	<5			9600	
1,1,2-Trichloroethane	5	0.2	410	41	5*	<5		27		21		22		<5	<5	<5	<5			46	
1,1,2,2-Tetrachloroethane	N/A	0.43	300	33	3	<5		500		450		510		<5	<5	<5	3	J		9800	
Tetrachloroethene (PCE)	5	0.1	110	11	5*	<5		77		1500		1500		<5	<5	<5	<5			9800	
Toluene	1000	720	1,500	1,500	1,500	<5		73		87		88		<5	<5	<5	<5			<5	
Vinyl chloride	2	0.02	25	2.5	2*	<10		970		8	J	7	J	<10	<10	<10	<10			8	J
Xylene (m and p)	10	210	22,000	22,000	22,000	<10		4	J	<10		<10		<10	<10	<10	<10			<10	
Xylene (o)	10	210	33,000	33,000	33,000	<5		3	J	<5		<5		<5	<5	<5	<5			3	J
TOTAL VOCs	2529					144		35309		15439		16554		21			3			36622	
10%	252.9					14.4		3530.9		1543.9		1655.4		2.1			0.3			3662.2	

* COCs where the ground water to Indoor Air screening level=MCL
Mirex: Not sampled
DNAPL: No Notation
NOT SAMPLED IN PDI
RECOMMENDED BY DDAGW
All wells in overburden unless noted
Most stringent of m- and p-xylene screening values used; or only 1 value available

NEASE CHEMICAL SITE: SOUTHEAST AREA GROUNDWATER

COCs Detected	MCL	Highest Conc	Well ID	Ratio	COC:MCL %
ppb	*ppb*	*ppb*		COC:MCL	
Acetone	N/A				
Benzene	5	4100	B-S	820	16
Carbon tetrachloride	5	13	PZ-7	3	0
Chlorobenzene	100	1000	PZ-7	10	0
Chloroform					
1,2-Dichlorobenzene	600	7530	B-S	13	0.24
1,3-Dichlorobenzene	N/A				
1,4-Dichlorobenzene	75	70	B-S	1	0.02
1,1-Dichloroethene (1,1-DCE)	7	80	B-S	11	0.22
1,2-Dichloroethane					
1,3-Dichloropropene (trans)	N/A				
1,3-Dichloropropene (cis)	N/A				
Ethylbenzene	700	3	B-S	4.29E-03	8.19056E-05
Phenol	N/A				
Tricloroethene (TCE)	5	9600	PZ-7	1920	36.69
1,1,2-Trichloroethane	5	46	PZ-7	9	0.18
1,1,2,2-Tetrachloroethane	N/A				
Tetrachloroethene (PCE)	5	9800	PZ-7	1960	37.46
Toluene	1000	88	PZ-3S	8.80E-02	0.001681795
Vinyl chloride	2	970	B-S	485	9.27
Xylene (m and p)	10	4	B-S	4.00E-01	0.007644523
Xylene (o)	10	3	B-S	3.00E-01	0.005733392
TOTALS	2529	33307		5233	100